



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/918,874

07/30/2001

Seth Marder

CIT86102DV

3252

35938 7590 09/10/2007
BIOTECHNOLOGY LAW GROUP
C/O PORTFOLIOIP
PO BOX 52050
MINNEAPOLIS, MN 55402

EXAMINER

METZMAIER, DANIEL S

ART UNIT

PAPER NUMBER

1712

MAIL DATE

DELIVERY MODE

09/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/918,874	Applicant(s) MARDER ET AL.	
	Examiner Daniel S. Metzmaier	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 3 is/are allowed.
- 6) ☒ Claim(s) 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/23/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 3 and 16-18 are pending.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 23 April 2007 has been entered.

Election/Restrictions

2. Claim 16 has been examined to the extent they read on the elected species. The remaining species in the claims 17 and 18 have been examined to the extent that they read on the elected species (i.e., when $m = 0$, and therefore $n = 0$ or is moot). Election was made **without** traverse in the reply filed on April 16, 2004 and acknowledged in the Office action mailed July 9, 2004.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Each of R_{e-m} , it is unclear what an amino acid is reacted to form said functional group. A similar situation exists and it is unclear what is intended for R_{a1-a3} , R_{b1-b3} , and R_{g1-g3} .

The structures define m, n, and o as possibly = zero and $m + n + o \geq 1$. the subscript "n" defines a repeating groups that is nested within the repeating unit defined by the subscript "m". When $m=0$, $n=1-10$ and $o=0$, the limitations of the structure are met but it is unclear where is the pi bridge. Thus, the claims are vague and indefinite regarding the metes and bounds of the subject matter, which applicants intend.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Art Unit: 1712

6. Claim 16 is rejected under 35 U.S.C. 102(b) as being anticipated by Sekisui Chem Ind KK, JP 02-187734A¹, as evidenced by Derwent Abstract, AN 90-265816/35 and partial translation. Sekisui Chem Ind KK discloses compounds reading on those employed in the claimed methods for use in semiconductor lasers. The step of two-photon absorption would have been inherent to the Sekisui Chem Ind KK compounds used as disclosed therein. Sekisui Chem Ind KK (column 12 as shown in the partial translation) discloses the method of subjecting the disclosed compounds to an Nd:YAG laser beam at 1.064 μm (1064 nm) wavelength and 10-mJ/pulse outputs. Since the energy units are given in mJ/pulse, it is reasonable to conclude that the laser beam employed in the Sekisui Chem Ind KK reference is a pulsed laser.

Furthermore, the result of irradiation with said laser produces a second harmonic generation, thereby observing green light at a wavelength of 532 nm, which is $\frac{1}{2}$ the incident light. The relaxation of the excited state to emit 2x the energy of the incident radiation / $\frac{1}{2}$ the wavelength is evidence that at least some simultaneous multi-photon absorption occurs in the process as inherent to the production of the second harmonic generation resulting from the pulsed laser irradiation of the same compounds.

Applicants' claims lack any limitations of the degree or amount of multi-photon absorption, the wavelength, or the result of the multi-photon absorption. The methods require irradiating a compound that is claimed with incident radiation to cause a multi-photon absorption and converting the compound to a multi-photon excited state. The wavelengths of the multiple photons are not required to be the same.

¹ Cited in applicants Information disclosure statement.

Art Unit: 1712

7. Claims 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Puccetti et al, "Chain-Length Dependence of the Third-Order Polarizability of Disubstituted Polyenes. Effects of End Groups and Conjugation Length", *J. Phys. Chem.*, 1993, 97, pp. 9385-9389². Puccetti et al (particularly page 9386 and 9387) disclose compounds reading on those employed in the claimed process (regarding claims 16 and 17, when $m = 0$), which are measured employing a pulsed Nd:YAG lasers to measure the second and third harmonic generation.

The result of irradiation with said laser produces a second or third harmonic generation, thereby resulting in relaxation, which is at least $\frac{1}{2}$ the incident light. The relaxation of the excited state to emit 2x or 3x the energy of the incident radiation / at least $\frac{1}{2}$ the wavelength is evidence that at least some simultaneous multi-photon absorption occurs in the process as inherent to the production of the second harmonic generation resulting from the pulsed laser irradiation of the same compounds.

Applicants' claims lack any limitations of the degree or amount of multi-photon absorption, the wavelength, or the result of the multi-photon absorption. The methods require irradiating a compound that is claimed with incident radiation to cause a multi-photon absorption and converting the compound to a multi-photon excited state. The wavelengths of the multiple photons are not required to be the same.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

² Reference is cited in applicants IDS.

Art Unit: 1712

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Swainson et al, US 4,333,165, in view of Minolta Camera Co Ltd, JP 62-010652, as evidenced by Derwent Abstract, AN 1987-054023.

The Swainson et al reference (column 11, lines 45 et seq and columns 13 to 14, lines 362 to 16, particularly line 4) is directed to three dimensional patterned media wherein simultaneous two-photon absorption systems may be employed including stilbene polymers with or without sensitizers or additional cross-linkers.

The Swainson et al reference differs from the claims in the stilbene compounds employed in the polymer compositions being patterned.

Minolta Camera Co Ltd (see Derwent Abstract and at least compounds (5), (16), and (18) on pages 434 and 435) disclose photosensitive materials formed of photosensitive compounds and may further include sensitizing dyes.

These references are combinable because they teach optically active materials and processes employing optically active materials. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention to employ structurally related compounds of Minolta Camera Co Ltd in the processes of the Swainson et al reference as functional equivalents to the stilbenes disclosed therein and/or as sensitizers.

11. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Swainson et al, US 4,333,165, in view of Konishiroku Photo Ind Co Ltd, JP 62-047646, as evidenced by Derwent Abstract, AN 1987-098574.

The Swainson et al reference (column 11, lines 45 et seq and columns 13 to 14, lines 362 to 16, particularly line 4) is directed to three dimensional patterned media wherein simultaneous two-photon absorption systems may be employed including stilbene polymers with or without sensitizers or additional cross-linkers.

The Swainson et al reference differs from the claims in the stilbene compounds employed in the polymer compositions being patterned.

Konishiroku Photo Ind Co Ltd (see Derwent Abstract and at least compounds (I-7) and (I-16) on pages 395 and 396) disclose photosensitive materials formed of photosensitive compounds.

These references are combinable because they teach optically active materials and processes employing optically active materials. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention to employ structurally related compounds of Konishiroku Photo Ind Co Ltd in the processes of the Swainson et

Art Unit: 1712

al reference as functional equivalents to the stilbenes disclosed therein for their advantageous properties photoreceptivity and repeat use and/or reproducibility of the photoreceptor.

Allowable Subject Matter

12. Claim 3 is allowed.

Response to Arguments

13. Applicant's arguments filed July 31, 2006 have been fully considered but they are not persuasive.
14. Applicant's arguments with respect to claims 16-18 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1712

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Daniel S. Metzmaier
Primary Examiner
Art Unit 1712

DSM